

APS search

4/16/97

09/070,908

\* U. S. P A T E N T T E X T F I L E \*

=> s 438/485/cclst and 438/487/cclst

189 438/485/CCLST

121 438/487/CCLST

L1 4 438/485/CCLST AND 438/487/CCLST

=> d cit 11 1-4

1. 5,296,405, Mar. 22, 1994, Method for photo annealing non-single crystalline semiconductor films; Shunpei Yamazaki, et al., **438/487**; 148/DIG.1, DIG.3, DIG.4, DIG.61, DIG.90, DIG.93; 438/483, **485** [IMAGE AVAILABLE]

2. 5,234,843, Aug. 10, 1993, Method of making a semiconductor film where the hydrogen and/or fluorine is released prior to ion beam crystallization; Keiji Oyoshi, et al., **438/485**, **487** [IMAGE AVAILABLE]

3. 5,180,690, Jan. 19, 1993, Method of forming a layer of doped crystalline semiconductor alloy material; Wolodymyr Czubytyj, et al., **438/485**; 136/258; 148/DIG.1, DIG.122; 204/192.25; 427/524; 438/483, **487** [IMAGE AVAILABLE] *Ab - deposit doped  $\alpha$ -semcond., then anneal to at least partially  $\chi$  Lize*

4. 4,217,393, Aug. 12, 1980, Method of inducing differential etch rates in glow discharge produced amorphous silicon; David L. Staebler, et al., 428/450; 136/258; 427/572; **438/485**, **487**, 705, 753, 799 [IMAGE AVAILABLE]

=> s 438/487/cclst and laser# and (TFT or thin film transistor#)

121 438/487/CCLST

132285 LASER#

4276 TFT

435549 THIN

348855 FILM

166425 TRANSISTOR#

5433 THIN FILM TRANSISTOR#

(THIN(W) FILM(W) TRANSISTOR#)

L2 68 438/487/CCLST AND LASER# AND (TFT OR THIN FILM TRANSISTOR#)

=> s 12 and (SiO or silicon(w) (oxide# or dioxide#))

76221 SIO

201578 SILICON

351523 OXIDE#

165688 DIOXIDE#

53745 SILICON(W) (OXIDE# OR DIOXIDE#)

L3 58 L2 AND (SIO OR SILICON(W) (OXIDE# OR DIOXIDE#))

=> s 13 and (plasma# or PECVD or glow discharg?)

82627 PLASMA#

2232 PECVD

16099 GLOW

L4 51 L3 AND (PLASMA# OR PECVD OR GLOW DISCHARG?)

=> s 13 not 14

L5 7 L3 NOT L4

=> d cit 14 1-51

1. 5,882,960, Mar. 16, 1999, Method of preparing a semiconductor having a controlled crystal orientation; Hongyong Zhang, et al., 438/166, 150, **487** [IMAGE AVAILABLE]
2. 5,879,974, Mar. 9, 1999, Method of manufacturing a semiconductor device; Shunpei Yamazaki, 438/162; 148/DIG.16; 438/166, **487**, 755 [IMAGE AVAILABLE]
3. 5,869,362, Feb. 9, 1999, Method of manufacturing semiconductor device; Hisashi Ohtani, 438/166; 148/DIG.16; **438/487** [IMAGE AVAILABLE]
4. 5,858,822, Jan. 12, 1999, Method for producing semiconductor device; Shunpei Yamazaki, et al., 438/166, **487** [IMAGE AVAILABLE]
5. 5,854,096, Dec. 29, 1998, Process for fabricating semiconductor device; Hisashi Ohtani, et al., 438/166, **487** [IMAGE AVAILABLE]
6. 5,851,862, Dec. 22, 1998, Method of crystallizing a silicon film; Hisashi Ohtani, et al., 438/166; 117/8; **438/487** [IMAGE AVAILABLE]
7. 5,843,833, Dec. 1, 1998, Method for producing semiconductor device; Hisashi Ohtani, et al., 438/486, **487** [IMAGE AVAILABLE]
8. 5,830,784, Nov. 3, 1998, Method for producing a semiconductor device including doping with a group IV element; Hongyong Zhang, et al., 438/154, 162, **487** [IMAGE AVAILABLE]
9. 5,827,772, Oct. 27, 1998, Fabrication process for **thin film transistor**; Kenichi Nakamura, 438/486, **487** [IMAGE AVAILABLE]
10. 5,821,135, Oct. 13, 1998, Methods for and applications of making buried structures in semiconductor thin films; Ping Mei, et al., 438/57, 89, 158, **487** [IMAGE AVAILABLE]
11. 5,817,550, Oct. 6, 1998, Method for formation of **thin film transistors** on plastic substrates; Paul G. Carey, et al., 438/166, 308, **487**, 535 [IMAGE AVAILABLE]
12. 5,817,548, Oct. 6, 1998, Method for fabricating **thin film transistor** device; Takashi Noguchi, et al., 438/160; 117/8, 904; 148/DIG.91; 438/166, 308, **487** [IMAGE AVAILABLE]
13. 5,811,327, Sep. 22, 1998, Method and an apparatus for fabricating a semiconductor device; Takashi Funai, et al., 438/166, 308, **487** [IMAGE AVAILABLE]
14. 5,783,468, Jul. 21, 1998, Semiconductor circuit and method of fabricating the same; Hongyong Zhang, et al., 438/166, 30, **487** [IMAGE AVAILABLE]
15. 5,776,803, Jul. 7, 1998, Manufacture of electronic devices comprising thin-film circuitry on a polymer substrate; Nigel D. Young, 438/149, 164, 166, **487**, 795, 967 [IMAGE AVAILABLE]
16. 5,773,329, Jun. 30, 1998, Polysilicon grown by pulsed rapid thermal annealing; Yue Kuo, 438/162; 148/DIG.4, DIG.16; 438/166, **487** [IMAGE AVAILABLE]

AVAILABLE]

17. 5,766,989, Jun. 16, 1998, Method for forming polycrystalline thin film and method for fabricating **thin-film transistor**; Shigeki Maegawa, et al., 438/166; 117/8, 904; 148/DIG.90; 438/308, **487** [IMAGE AVAILABLE]
18. 5,756,364, May 26, 1998, **Laser** processing method of semiconductor device using a catalyst; Koichiro Tanaka, et al., 438/30; 117/8, 904; 148/DIG.90, DIG.93; 438/166, **487** [IMAGE AVAILABLE]
19. 5,753,542, May 19, 1998, Method for crystallizing semiconductor material without exposing it to air; Shunpei Yamazaki, et al., 438/162; 29/25.01; 117/8; 438/166, 308, **487** [IMAGE AVAILABLE]
20. 5,753,541, May 19, 1998, Method of fabricating polycrystalline silicon-germanium **thin film transistor**; Kousaku Shimizu, 438/161; 148/DIG.58; 257/63, 65; 438/162, 166, **487** [IMAGE AVAILABLE]
21. 5,736,439, Apr. 7, 1998, Method for forming a semiconductor device in which the insulating layer is heated to contract after crystallization of the semiconductor layer; Shunpei Yamazaki, et al., 438/166, 479, **487**, 795, 967 [IMAGE AVAILABLE]
22. 5,712,191, Jan. 27, 1998, Method for producing semiconductor device; Setsuo Nakajima, et al., **438/487**; 117/8; 148/DIG.16, DIG.93; 438/162, 166, 412 [IMAGE AVAILABLE]
23. 5,683,935, Nov. 4, 1997, Method of growing semiconductor crystal; Yasuaki Miyamoto, et al., 117/8, 904; **438/487** [IMAGE AVAILABLE]
24. 5,681,759, Oct. 28, 1997, Method of fabricating semiconductor device; Hongyong Zhang, 438/162; 117/8; 438/166, 479, **487**, 910, 958 [IMAGE AVAILABLE]
25. 5,639,698, Jun. 17, 1997, Semiconductor, semiconductor device, and method for fabricating the same; Shunpei Yamazaki, et al., 438/486; 117/8, 930; 438/162, 166, **487** [IMAGE AVAILABLE]
26. 5,624,873, Apr. 29, 1997, Enhanced crystallization of amorphous films; Stephen J. Fonash, et al., **438/487**, 764 [IMAGE AVAILABLE]
27. 5,624,851, Apr. 29, 1997, Process of fabricating a semiconductor device in which one portion of an amorphous silicon film is thermally crystallized and another portion is **laser** crystallized; Toru Takayama, et al., 438/166; 117/8; **438/487** [IMAGE AVAILABLE]
28. 5,612,250, Mar. 18, 1997, Method for manufacturing a semiconductor device using a catalyst; Hisashi Ohtani, et al., 438/795, 162, **487** [IMAGE AVAILABLE]
29. 5,605,846, Feb. 25, 1997, Method for manufacturing semiconductor device; Hisahi Ohtani, et al., **438/487**; 148/DIG.16; 438/166 [IMAGE AVAILABLE]
30. 5,591,653, Jan. 7, 1997, Method of manufacturing Si-Ge **thin film transistor**; Toshiyuki Sameshima, et al., 438/166; 148/DIG.58; **438/487** [IMAGE AVAILABLE]
31. 5,578,520, Nov. 26, 1996, Method for annealing a semiconductor; Hongyong Zhang, et al., **438/487**; 117/200; 438/488, 799, 908 [IMAGE AVAILABLE]
32. 5,569,610, Oct. 29, 1996, Method of manufacturing multiple polysilicon TFTs with varying degrees of crystallinity; Hongyong Zhang, et al., 438/166, **487** [IMAGE AVAILABLE]
33. 5,561,081, Oct. 1, 1996, Method of forming a semiconductor device by activating regions with a **laser** light; Akira Takenouchi, et al.,

438/166; 117/904; 438/479, **487**, 799 [IMAGE AVAILABLE]

34. 5,550,070, Aug. 27, 1996, Method for producing crystalline semiconductor film having reduced concentration of catalyst elements for crystallization and semiconductor device having the same; Takashi Funai, et al., 438/486; 117/8; 148/DIG.16; 438/166, **487** [IMAGE AVAILABLE]

35. 5,543,352, Aug. 6, 1996, Method for manufacturing a semiconductor device using a catalyst; Hisashi Ohtani, et al., **438/487**, 166 [IMAGE AVAILABLE]

36. 5,530,265, Jun. 25, 1996, Insulated gate semiconductor device and process for fabricating the same; Yasuhiko Takemura, 257/66, 51, 52, 57, 347; 438/158, **487**, 517 [IMAGE AVAILABLE]

37. 5,529,937, Jun. 25, 1996, Process for fabricating **thin film transistor**; Hongyong Zhang, et al., 438/471; 117/8; 148/DIG.1, DIG.4, DIG.16, DIG.60; 438/476, **487** [IMAGE AVAILABLE]

38. 5,529,630, Jun. 25, 1996, Apparatus for manufacturing a liquid crystal display substrate, and apparatus for evaluating semiconductor crystals; Issei Imahashi, et al., 118/665, 620; 148/DIG.6, DIG.90; 250/354.1, 492.23; 422/108; 438/7, 166, **487** [IMAGE AVAILABLE]

39. 5,496,768, Mar. 5, 1996, Method of manufacturing polycrystalline silicon thin film; Toshio Kudo, **438/487**; 117/8, 904; 148/DIG.90, DIG.93; 438/166, 799 [IMAGE AVAILABLE]

40. 5,466,617, Nov. 14, 1995, Manufacturing electronic devices comprising TFTs and MIMs; John M. Shannon, 438/155; 148/DIG.91, DIG.150; 438/30, 158, 166, 479, **487** [IMAGE AVAILABLE]

41. 5,456,763, Oct. 10, 1995, Solar cells utilizing pulsed-energy crystallized microcrystalline/polycrystalline silicon; James L. Kaschmitter, et al., 136/258; 257/49, 75; 438/97, **487** [IMAGE AVAILABLE]

42. 5,424,230, Jun. 13, 1995, Method of manufacturing a polysilicon **thin film transistor**; Haruo Wakai, 438/166; 148/DIG.1, DIG.90, DIG.150; **438/487** [IMAGE AVAILABLE]

43. 5,413,958, May 9, 1995, Method for manufacturing a liquid crystal display substrate; Issei Imahashi, et al., **438/487**; 148/DIG.90, DIG.150; 438/22, 30, 166 [IMAGE AVAILABLE]

44. 5,373,803, Dec. 20, 1994, Method of epitaxial growth of semiconductor; Takashi Noguchi, et al., 117/8, 9, 10, 904, 913, 930; 438/479, **487** [IMAGE AVAILABLE]

45. 5,372,836, Dec. 13, 1994, Method of forming polycrystalline silicon film in process of manufacturing LCD; Issei Imahashi, et al., 438/5; 427/8, 554, 555; 438/30, **487** [IMAGE AVAILABLE]

46. 5,366,926 Nov. 22, 1994, Low temperature process for **laser** dehydrogenation and crystallization of amorphous silicon; Ping Mei, et al., **438/487**; 148/DIG.90, DIG.93; 438/89, 799 [IMAGE AVAILABLE]

47. 5,365,875, Nov. 22, 1994, Semiconductor element manufacturing method; Ichirou Asai, et al., **438/487**; 117/7, 10, 904 [IMAGE AVAILABLE]

48. 5,346,850, Sep. 13, 1994, Crystallization and doping of amorphous silicon on low temperature plastic; James L. Kaschmitter, et al., **438/487**, 96, 535 [IMAGE AVAILABLE] *(224) - Side between 846 & 847*

49. 5,336,641, Aug. 9, 1994, Rapid thermal annealing using thermally conductive overcoat; Jim Fair, et al., 438/486, 166, **487**, 530, 799, 902 [IMAGE AVAILABLE]

50. [5,313,076,] May 1994, Thin film transistor and semiconductor device including a laser crystallized semiconductor; Shunpei Yamazaki, et al., 257/66, 64, 65, 70, 347; 438/166, 487 [IMAGE AVAILABLE] (D102) As .... to dep  $\alpha$ -film  $\alpha$ -Si oxide or nitride on surf of single crystal sub.

51. [5,180,690], Jan. 19, 1993, Method of forming a layer of doped crystalline semiconductor alloy material; Wolodymyr Czubytyj, et al., 438/485; 136/258; 148/DIG.1, DIG.122; 204/192.25; 427/524; 438/483, 487 [IMAGE AVAILABLE]

=> above (P15) .... TFT uses  $\text{Si}_3\text{N}_4$  as gate insulator - or alternatively  $\text{SiO}_2$  can be deposited by glow discharge decompos. of  $\text{SiH}_4$  + oxygen

487 [IMAGE AVAILABLE]  
above (D15) .... TFT uses Si<sub>3</sub>N<sub>4</sub> as gate insulator - or alternately  
=> SiO<sub>2</sub> can be dep'd by glow discharge  
decompn. of silane + oxygen  
=>  
(D3) Block... or RF glow disch dep'n, ex. ex-Si film Si cont. precursr.  
=> d cit 15 1-7 (B9A)... or RF " " " => multilayer et.-struck

1. 5,821,137, Oct. 13, 1998, Thin film semiconductor device including a driver and a matrix circuit; Haruo Wakai, et al., 438/163, 166, **487**  
[IMAGE AVAILABLE]

2. 5,773,309, Jun. 30, 1998, Method for producing silicon thin-film transistors with enhanced forward current drive; Kurt H. Weiner, 438/166; 117/8, 904; 148/DIG.90; **438/487** [IMAGE AVAILABLE]

3. 5,733,641, Mar. 31, 1998, Buffered substrate for semiconductor devices; David K. Fork, et al., 428/210; 117/43, 45; 427/126.1, 126.2, 126.3; 428/156, 336, 428, 432, 446, 469, 472, 697, 701, 702; **438/487**, 967 [IMAGE AVAILABLE]

4. 5,612,251, Mar. 18, 1997, Manufacturing method and device for a polycrystalline silicon; Jae-won Lee, 438/795; 117/8, 53, 904, 931; 438/166, **487** [IMAGE AVAILABLE]

5. 5,529,951, Jun. 25, 1996, Method of forming polycrystalline silicon layer on substrate by large area excimer **laser** irradiation; Takashi Noguchi, et al., **438/487**; 117/8, 43, 904; 148/DIG.90, DIG.93; 438/166 [IMAGE AVAILABLE]

6. 5,409,857, Apr. 25, 1995, Process for production of an integrated circuit; Seiichi Watanabe, et al., 438/158; 148/DIG.90, DIG.164; 438/161, 166, **487** [IMAGE AVAILABLE]

7. 5,382,548, Jan. 17, 1995, Method for making polystalline silicon thin film; Jae W. Lee, **438/487**; 148/DIG.90; 438/479, 799 [IMAGE AVAILABLE]